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MINOR NOTICES.

DR. G. N. BEST has revised the North American species of *Heterocladium*⁴ recognizing four species, of which two, *H. Macouni* and *H. heteropteroides* are new. Three Kindbergian species are in the "doubtful or excluded" list.—C. R. B.

EMMA J. COLE⁵ has published a catalogue of the native vascular plants growing in the vicinity of Grand Rapids, Michigan. The introduction presents the general physiographic and ecologic features of the region, and in the list all known stations are carefully recorded. The number of native plants recorded is 1111, of introduced plants 176.—J. M. C.

V. K. CHESNUT and E. V. WILCOX have published a valuable preliminary report (Bull. 26, Div. of Bot., U. S. Dept. Agric.) of their investigation of the stock-poisoning plants of Montana. It contains not only a detailed account of their observations and experiments, but also summaries of symptoms and remedies. The most important plants poisonous to stock in Montana are the death camas (*Zygadenus venenosus*), tall larkspur (*Delphinium glaucum*), purple larkspur (*D. bicolor*), Wyoming water hemlock (*Cicuta occidentalis*), white loco weed (*Aragallus spicatus*), and various lupines (*Lupinus* spp.).—J. M. C.

THE FIRST FASCICLE of what promises to be a very excellent treatise on botany by Bonnier and DuSablon has just been published.⁶ The work is intended specially for advanced students in the universities and schools of medicine, pharmacy and agriculture. The first section discusses such general matters as the characters of plants, the members of the plant body, the large divisions of plants, the cell and the tissues. The second section, entitled the morphology of angiosperms, concerns itself with the primary and secondary structure of stamens, leaves, and roots. The illustrations are fresh and in the main excellent, though the anatomical ones are better than those representing external features. We reserve further notice of this work until its completion.—C. R. B.

WILLIAM R. MAXON⁷ has published a very useful list of the pteridophytes of North America north of Mexico. Eaton's *Ferns of North America* and

⁴ Bull. Torr. Bot. Club 28: 123-131. pls. 13, 14. 1901.

⁵ Grand Rapids flora, a catalogue of the flowering plants and ferns growing without cultivation in the vicinity of Grand Rapids, Michigan. 8vo. pp. xxii + 170. Grand Rapids: Lyon, Kymer & Palmer Company. 1901. \$1.00.

⁶ BONNIER, GASTON, and DUSABLON, LECLERC: *Cours de botanique ; anatomie ; physiologie ; classification ; applications agricoles, industrielles, médicales ; morphologie expérimentale ; géographie botanique ; paléontologie ; historique ; à l'usage des élèves des universités, des écoles de médecine et de pharmacie, et des écoles d'agriculture.* Vol. I, part 1. 8vo, pp. 384, figs. 553. Paris: Paul Dupont. 1901. Complete in 6 parts. 25 fr. Each part singly 6 fr.

⁷ A list of the ferns and fern allies of North America north of Mexico, with principal synonyms and distribution. Proc. U. S. Nat. Museum 23: 619-651. 1901.

Underwood's *Our native ferns and their allies* have been the only works of sufficient scope to include this territory. The former is more than twenty years old, and the latter is essentially a popular treatise in which there are no citations. As a consequence, a list of the known ferns and their synonymy has been a *desideratum* for some time, and this Mr. Maxon has supplied. Besides his careful bibliographic work, the author has included the recorded geographic range of each species, thus adding very materially to the value of the list. What may be called the Underwood nomenclature and sequence are followed.—J. M. C.

A LABORATORY MANUAL⁸ has recently been published by F. E. Clements and I. S. Cutter. It is of special interest as being "an authoritative expression from the Department of Botany of the University of Nebraska upon the kind and amount of elementary botany that should be taught in the accredited schools and colleges of the state." The directions for work are clear and compact, and based upon long experience in handling the material. Granted that such material is best suited to high-school courses, no exception can be taken to the way in which it is presented. A question might be raised, however, as to the "kind of elementary botany" that this book calls for. To start high-school pupils with a short course in histology is probably not commended now as much as formerly. The part devoted to structure and classification would seem to be a more fitting introduction to the use of plant material. A good set of physiological experiments is also included, and it is interesting to note that a certain amount of work in ecology is called for. The book must be of great service to the schools of Nebraska in so far as it relates them to the work of the University.—J. M. C.

THE PROCEEDINGS of the twenty-first meeting of the Society for Promotion of Agricultural Science, recently distributed, form a volume of 183 pages, containing articles of botanical interest. The president's chair was occupied by a botanist, W. J. Beal, of Michigan, but the annual address dealt chiefly with matters of general interest to the society. A "syllabus for a short course on grasses and other forage plants" by the same person is of decided pedagogical value. "The development of a tomato hybrid" by W. M. Munson is an account of the production of a desirable hybrid variety by crossing the common and the currant tomato. "The chemical function of certain soil bacteria" by Frederick D. Chester, "Seven years of experiments with bush beans" by Byron D. Halsted, "The value of willows in retaining the banks of streams" by W. W. Rowlee, "The course in cryptogamic botany" by L. H. Pammel, "The weedy plants of Iowa," also by Mr. Pammel, contain botanical matter with practical applications of the facts. H. L. Bolley corrects some errors of microscopic interpretation occurring in his

⁸A laboratory manual of high school botany. 8vo. pp. 123. Lincoln, Nebraska: The University Publishing Company. 1900.

bulletin no. 27 from the N. Dakota Experiment Station. Two very interesting articles are "Twenty years progress in pathology" by B. T. Galloway, and "The botanic garden as an aid to agriculture" by William Trelease.—J. C. ARTHUR.

A NEW LABORATORY GUIDE for bacteriology by Mr. W. D. Frost, of the University of Wisconsin, is a convenient combination of directions for experiments, blank pages, charts, and outline drawings in which results may be recorded, together with some general information.⁹

The first part of the book is devoted to general bacteriology with the usual description of technique and laboratory methods. The medical part of the book is more complete than usual for an elementary text book.

General information is given in the form of brief notes wherever a germ is mentioned for study, relating its source, time of isolation and discoverer, with references to the original and other descriptions. A chapter on taxonomy includes Chester's scheme of nomenclature of cultural characters and Migula's valuable classification of bacteria.

The most striking features of the book are the well-outlined and systematic arrangement of material, and the unusual and deserved attention given to one of the most important problems in the study of bacteria today, the effect of environmental action. The chart blanks are excellently designed for the record of the numerous physiological and morphological characters of a culture under study. A useful supplement to these detailed record blanks would be a few charts such as those recommended by Fuller for recording definite position and negation reactions in comparative form. The book as it stands, however, is very complete and will be welcomed in many laboratories.—MARY HEFFERAN.

NOTES FOR STUDENTS.

THE great prevalence of potato blight (*Phytophthora infestans*) in the state of Washington for the past two years has led to the publication of a bulletin¹⁰ on the subject by the Agricultural Experiment Station, based on experiments made at the Puyallup station. Bordeaux mixture applied before the disease began to be apparent and again after about two weeks was found to decrease materially the injury from the disease.—ERNST A. BESSEY.

PROFESSOR CONWAY MACMILLAN has been studying the growth periodicity of the potato tuber¹¹ by the method described in this journal (16:149. 1891) which he has improved upon by employing a second wheel to magnify

⁹ FROST, WILLIAM DODGE: A laboratory guide in elementary bacteriology. 4to pp. viii + 200. Published by the author. Madison, Wis. 1901.

¹⁰ BRODIE, DAVID A.: Potato blight and its treatment. Bull. 46, Washington Agricultural Experiment Station, pp. 15, figs. 5. 1901. Pullman, Washington.

¹¹ Bull. Minn. Acad. Nat. Sci., 3:355-362, 1901.